Computing @ GYSS
We teach thinking

What is Computing?

Q: What is an applied subject?

A: Targeted at students with interest and aptitude for the specific field.

Q: What are the students going to learn?

A: Knowledge and skills needed to solve real-world problems with computers. Development and application of **computational thinking skills** to formulate computing solutions.

Students will be taught how to go through a **systematic process of thinking when solving problems (abstraction), formulating steps for solutions (algorithmic thinking)** and **writing computer programs (programming/coding)** to produce the solutions

Why Computing?

- **H**arness technology to effect transformation in health, transport, urban living, government services and businesses.

- **A**dvancement in computer technology.

- **R**equire people with strong computational capacity and thinking skills to solve complex/ unknown problems.

- **D**ata analytics are transforming the future of business and research in diverse areas

"If you give a man a fish, you feed him for a day. If you teach a man to fish, you feed him for a lifetime."
"Nothing is HARD in life when you are willing to learn."

Post-Secondary

- A Levels > Computing

- Poly > Computing Related Course

School of Computing						
Bachelor of Computing (Computer Science)	99.1%	96.4%	$5,898	$5,800	$6,00	$6,000
Bachelor of Computing (Information Security)*	100.0%	100.0%	$4,992	$5,000	$5,09	$5,400
Bachelor of Computing (Information Systems)	97.5%	96.2%	$5,087	$5,000	$5,21	$5,000
Bachelor of Science (Business Analytics)	100.0%	100.0%	$5,437	$5,050	$5,60	$5,400

NUS Graduate Employment Survey 2021
6,897 fresh graduates and 830 follow-up graduates from NUS were surveyed in November 2021.

Growing List

Apple · Google · amazon · Microsoft

CB INSIGHTS — AI 100 — 2022

Cross-industry applications

Manufacturing
LANDING AI
INSTRUMENTAL
elementary
fēro labs

Warehouse automation
Agility Robotics
nimble
THIRD WAVE AUTOMATION

Sales & contact center
OBSERVE·AI
CRESTA
循环智能 RECURRENT AI

Search
Twelve Labs
YOU
Jina

Cybersecurity
OBSIDIAN
CHEQ
Duality

Customer feedback analysis
unit Q

Location data
SAFEGRAPH

Worker safety & incident prevention
Urbint

Business intelligence
AIBLE
Pecan

Engineering design
NEURAL CONCEPT
Physna

IT & devops automation
harness
cast

Other R&D
sparkcognition
InstaDeep

Industry-specific applications

Finance & insurance
zeni
Unit21
hazy
EvolutionIQ
feedzai
cervest
TRACTABLE

Retail
Depict
Afresh
nuro
Crossing Minds
Cosmose AI
avataar

Healthcare
SWORD HEALTH
ACTIV SURGICAL
Rad AI
OWKIN
Syllable
healx
Insilico Medicine
Whisper
Curai Health
ALIFE

Telecom
DEEPSIG
net AI

Aerospace & defense
SHIELD AI
MODERN INTELLIGENCE

Government
zencity

Auto
waabi
Apex.AI
nodar
autox
PHIAR

Agriculture
regrow
IRON OX

Construction
BUILT ROBOTICS
CANVAS

Maritime
BEARING.ai

Gaming
99wp
inworld

Waste management
AMP ROBOTICS

Media
WELLSAID
SURREAL

AI development tools

AI chips
LUMINOUS
GRAPHCORE
UNTETHER AI
SambaNova SYSTEMS
dm

Data annotation
sama
Snorkel
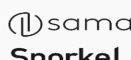
Synthetic data
gretel

Data de-identification
PRIVATE AI

Data quality & observability
SUPERCONDUCTIVE
Anomalo
MC MONTE CARLO

Version control & experiment tracking
iterative
neptune.ai
Pachyderm
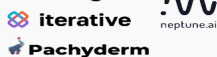
Model validation & monitoring
LatticeFlow
TROJ.AI
ROBUST INTELLIGENCE
fiddler

ML platforms
anyscale
Unbox
ABACUS.AI
DataRobot

Machine learning deployment
OctoML

Resource optimization
run ai

Computer vision
encord

Natural language processing
Hugging Face
EXPLOSION
co:here
AI21 labs

Note: Companies are private as of 4/29/22

What do we teach in Computing Class?

CONTENT OUTLINE

The syllabus consists of four modules: (1) Data and Information, (2) Systems and Comm[...]
(3) Abstraction and Algorithms, and (4) Programming.

MODULE 1 – DATA AND INFORMATION
This module is about the handling and processing of data in computer systems, as well a[...]
be ethical when dealing with data. Students should be able to identify different types of dat[...]
and explain what the data is for, and explain how the data is represented or organized fo[...]
and output with reference to a given problem. Students will be more aware of ethical issu[...]
respect to data, including privacy of data.

MODULE 2 – SYSTEMS AND COMMUNICATIONS
This module is about systems involving computer technology and computing devices. St[...]
learn the inter-relationships between parts and whole of a system; as well as the function[...]
systems in enabling communications between human and computing device (machine), [...]
machine, and within a machine.

MODULE 3 – ABSTRACTION AND ALGORITHMS
This module is about problem solving and how a problem may be solved by breaking it i[...]
manageable parts and solving all the smaller parts. An algorithm describes a solution for[...]
that is independent of a programming language and may be presented in pseudo-code (v[...]
program structures will be more pronounced) or diagrammatically (flowchart). Students s[...]
able to know the difference between pseudo-code and flowchart.

MODULE 4 – PROGRAMMING
This module is about application and development of logical thinking and reasoning, as w[...]
problem-solving skills through the design and development of software solutions using p[...]
language(s). An algorithm describes a solution independent of a programming language [...]
programming language depicts the solution that is workable on a computing device.

Summary of details for each paper:

| Paper	Mode	Duration	Weighting	Marks	Format	Modules Assessed
1	Written	2 h	70%	80	A mixture of – Short answer questions – Matching questions – Cloze passage – Structured questions	All the four modules
2	Lab-based	2 h 30 min	30%	50	4 compulsory structured questions – Use of spreadsheet functions and features – Refinement of program – Debugging of program – Development of program with no more than 40 lines of code Development of program will carry 20 marks. The remaining three questions average 10 marks.	Unit 1.1 Data Management from module 1 Module 4: Programming

What do we do in Computing Class?

Google Classroom

Python and Makers Tech
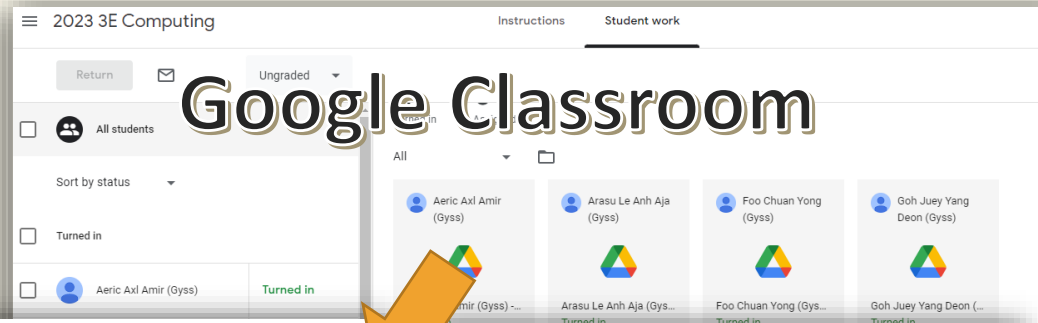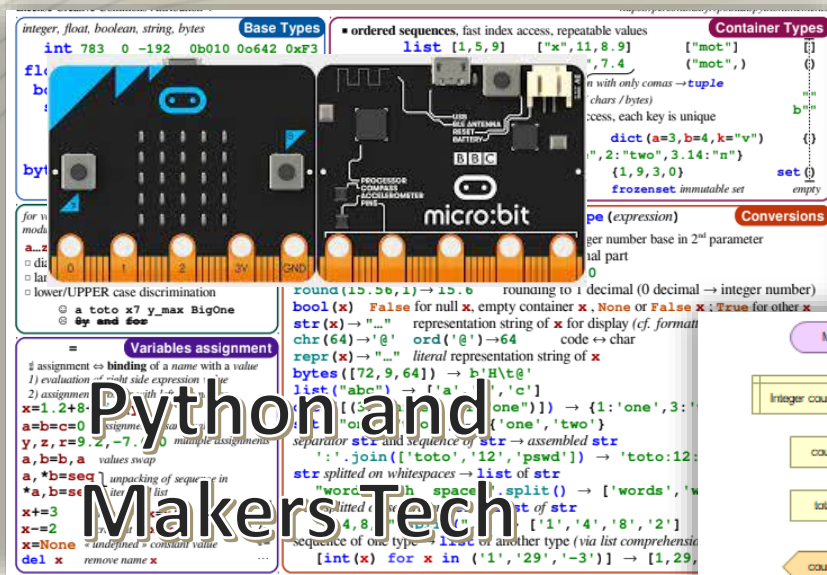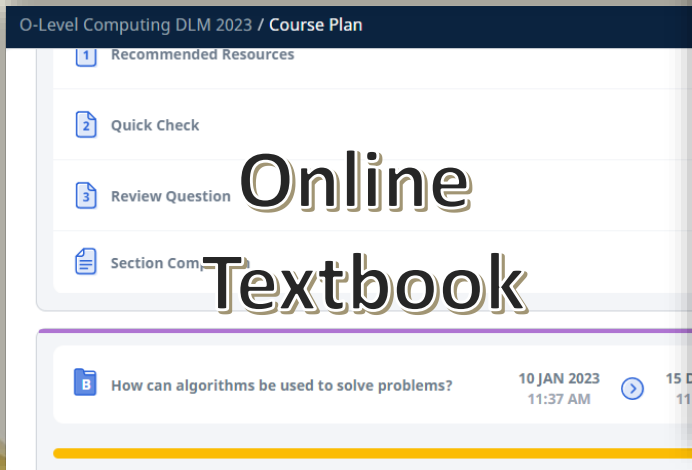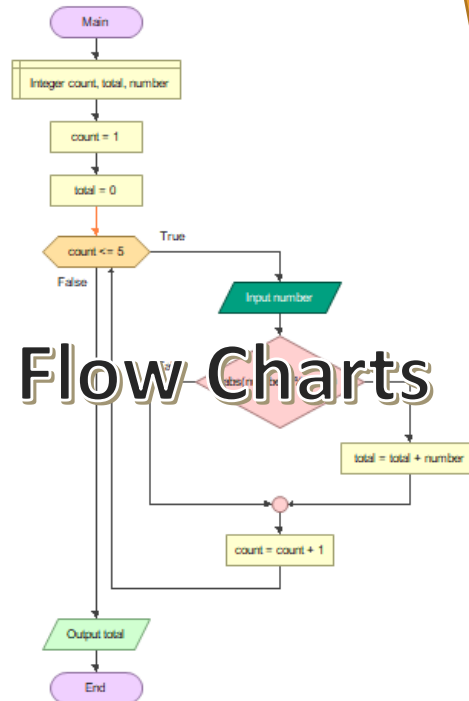
Flow Charts

Coding

Online Textbook
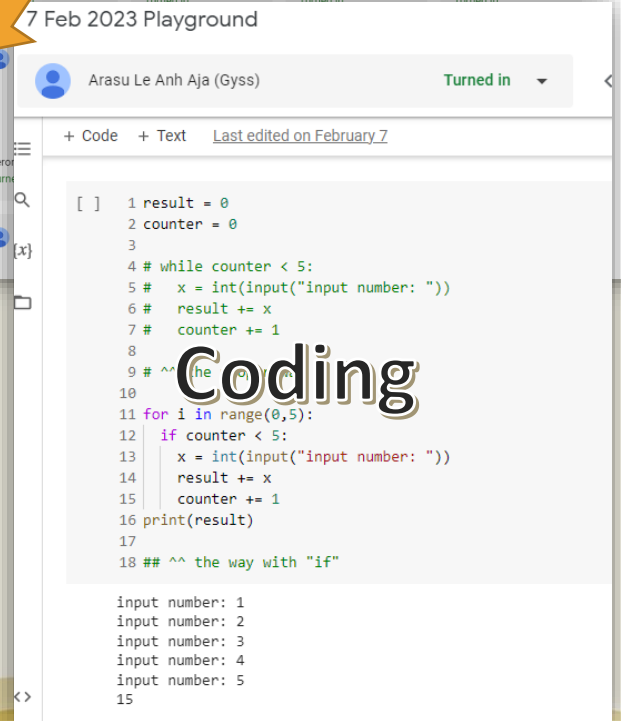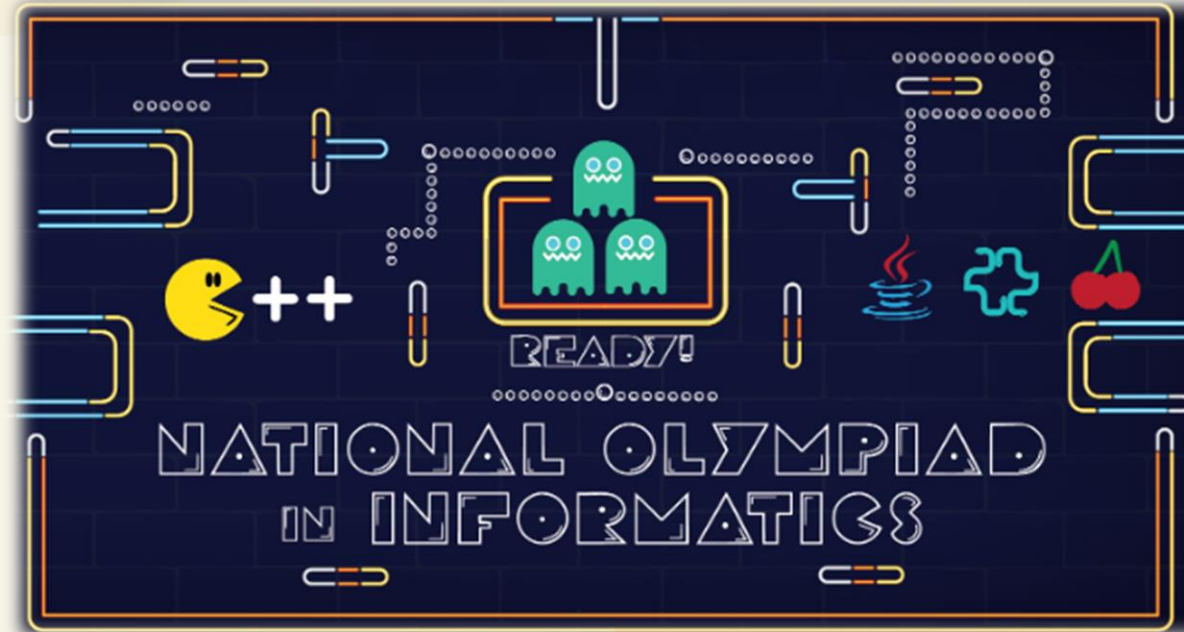
What do we do in Computing Class?

Olympiad

The June Conference

Our flagship event of the year, the June Conference will be held in around the first week of June, with a central theme: **Artificial Intelligence (AI)**. We'll focus on the integration of AI into numerous fields, like Health, the Government and Industry, and we're also proud to partner with AI Singapore again!

Organising Schools

Partners

Conferences

Criteria

- **Overall Maths Grade > = 65%**

- **Additional Mathematics**

FERLYN NG 3E2

DEON GOH 3E2

"I took up computing as it enabled me to solve complex, challenging problems and help my friends find solutions through technological means. Computing offers me a pathway to different types of careers in future. "
– Deon

"The lesson is different from what I have experienced. We learn everything through our Chromebooks, and there is a lot of discussion and thinking when we solve different types of problems. " - Ferlyn